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[redacted]
24 February 1982

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MEMORANDUM FOR THE RECORD

FROM: [redacted]

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SUBJECT: National Intelligence Council Meeting Concerning the
Siberian/West European Gas Pipeline, 17 February 1982

1. On 17 February 1982, the National Intelligence Council (NIC) convened a meeting in Washington to discuss Soviet capabilities to construct the USSR-West European gas pipeline. Washington attendees included representatives from NSC, CIA, the Departments of State, Commerce, and Defense. Experts who attended from the private sector (most of whom were nominated for attendance [redacted]) included the following individuals:

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2. [redacted] C/OSA [redacted] began the session with a half-hour discussion of the Soviet fuel industry with emphasis placed on the construction of gas pipelines. The major topics covered by [redacted] speech included the following:

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a. Major Problems Confronting the Soviet Gas Pipeline Industry:

(1) Lack of dynamism in the Ministry of Power Machine Building.

(2) The practice of reverse incentives, which provides bonuses to workers based on the amount of work accomplished rather than the quality of work.

(3) The poor administration of the gas industry.

(4) The poor quality of equipment and maintenance, especially in permafrost regions.

b. Soviet Options for Response to U.S. Sanctions:

(1) Transfer extra turbines and compressors to the Export line.

(2) Divert equipment from existing domestic lines.

(3) Modify aircraft turbines for use on gas pipelines.

(4) Add 1300 KM of 56-inch pipe to the line in order to link Novopskov to Uzhgorod, Czechoslovakia. Should any of these options be exercised, the Soviets could meet their export needs, but possibly at significant domestic expense. The Soviets might not be able to complete planned domestic pipelines, therefore delaying delivery of gas to the domestic economy. The 1985 gas production could be reduced to 550 billion M³ from the anticipated 638 billion M³.

c. Estimated Fuel Production: Soviet oil and coal production is stagnating. As indicated in Figure 1, CIA estimates for the production of these fuels shows a great decline from previous years. The Soviets are facing severe energy problems and might have to reduce exports of fuels to East Europe as well as to the domestic economy. It is, therefore, important that Soviet gas production be increased. CIA believes that Soviet gas production goals are overly ambitious. Whereas the Soviets plan to produce 630 billion M³ of gas in the period of 1981-85, CIA's pre-embargo estimate (i.e. anticipating the use of

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Western/U.S. technology on the pipeline) was 585 billion M³. The similarity in the increments of the last two 5-year plans is explained as follows: 1975-80 gas production included the development of many fields throughout the USSR; 1981-85 production incorporates the development of the Urengoy field alone. The Soviets expect the Urengoy field to produce 250 billion M³ of gas per year.

3. Perhaps the most important issue addressed at the NIC meeting was Soviet equipment constraints. As outlined by Maurice Ernst, these constraints included the need for compressors, pipe and pipelayers, turbines, and actual construction. The discussions surrounding these constraints is described below.

a. Pipes and Pipelayers:

(1) According to [] 56-inch pipe is not manufactured in the U.S. The Soviets are able to purchase the pipe from firms in West Germany and Italy, so the U.S. sanctions will not hinder Soviet acquisition of pipe. 25X1

(2) The U.S. sanctions will likewise have little impact on Soviet acquisition of pipelayers. [] (Caterpillar) explained that the Soviets now have approximately 1,000 pipelayers: roughly 900 of the vehicles (and replacement parts) were sold to the Soviets by Caterpillar and the remaining 100 were manufactured by Komatsu of Japan. Five hundred of the pipelayers were purchased within the last year or two. According to [] the Soviets have ordered another 1,500 Komatsu units. [] indicates that 760 vehicles are now under contract: 400 of these were ordered in October 1981 and 360 were ordered in December 1981. The Japanese are not planning to apply their support of U.S. sanctions to these units and will therefore ship the pipelayers to the USSR. Each pipelayer is worth \$208,000. 25X1
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(3) [] supported Mr. []'s remarks and provided some additional insight into the matter. He presented a copy of a Soviet brochure which reveals that the Soviets are producing their own pipelayer. The machine, designated "T-502", was shown at a Moscow trade show in June. [] claimed that the T-502 is actually in production, and is 25X1
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not simply a prototype. [] employee reported that he saw Komatsu pipelayers--the "375" model--in the USSR.

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[] finished his remarks by observing that the Soviets have many alternatives to pipelayers, such as using cranes, Soviet-made T330 pipelayers used in tandem, etc.

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b. Compressors and turbines:

(1) [] explained that one-third of Soviet compressors are powered by Western-made turbines. The other two-thirds are powered by Soviet-manufactured turbines, which are habitually plagued by inadequate cooling. The Soviet 6.3MW units are built at the Sumy plant, and the 10 MW units are built at the Nevskiy plant (Leningrad).

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(2) [] briefly outlined the Soviets' original plan for construction of the export pipeline. According to [], with the concurrence of the other participants, the Soviets planned to construct two strands of pipeline. The compressor stations are designed to handle the two lines. However, the West Europeans scaled down their anticipated needs for gas, claiming that they will not need as much gas now as they will in the late 1980s. As a result, the Soviets put the plans for the second line on a backburner. They were not motivated by the U.S. embargo.

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(3) [] also stated that the Soviets will have no difficulty obtaining compressors from non-U.S. suppliers. The availability of gas turbines is limited as a result of the U.S. sanctions, yet the Soviets will be able to meet their needs in various ways:

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(a) The West German firm Gute Hoffnungs Huette (GHH) can build the reverse-engineered GE MS500-2 turbine.

(b) Electric power turbines, made by numerous non-U.S. firms, can be substituted.

(c) Steam turbines can be substituted.

(d) Nuovo Pignone's MS1002 can be used. This is an excellent turbine of 10,000 horsepower and can easily be used on gas transmission pipelines. The turbine is completely owned by the Italian firm and

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is consequently not affected by the U.S. embargo. The modular design of the turbine allows easy installation (similar to the MS3002). The Nuovo Pignone MS1002 is used in Algeria, among other places.

(4) [] confirmed that the Soviets have the capacity to manufacture their own compressors at three plants in Kazan, Leningrad, and the Urals. They will have more difficulty obtaining gas turbines, and will need replacement parts for the buckets and first-stage nozzles (these parts are subject to direct contact with hot gas). The other components--such as blades--are long-lived under normal conditions and should pose no problems.

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(5) [] visited the Urengoy region circa February 1977, where he saw Soviet-made compressor stations. He found the stations to be extremely crude; in fact, they were comparable to U.S. equipment of the 1920s. The treating plants especially impressed him as being poorly made. Nevertheless, the Soviets appeared to be capable equipment operators.

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(6) [] discussed the possibility that the Soviets have reverse-engineered a GS MS5002 gas turbine. The Soviets have had nine GE 25 MW turbines since 1971, when they were supplied by the Italian firm of Nuovo Pignone. GE suspects that a prototype 25 MW unit, build at the Nevskiy plant, is a reverse-engineered GE turbine. Since the Soviets are weak in engineering and production, [] does not believe they can produce the turbine within three years. The Soviets have apparently formulated blueprints of their new 25 MW turbine, which they will turn over to the West German GHH firm for production of the turbines. This will be a straight license arrangement between the Soviets and GHH. Although GE has not yet actually seen the Soviet 25 MW unit, the reported dimensions are identical to the GE MS5002 turbine.

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(7) [] noted that there is also a turbine plant at which is operated by the Ministry of Power Engineering. He had little information on this plant and was not sure what type of turbines were produced at the facility. [] thought that the Sverdlovsk facility produced marine turbines.

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(8) West European suppliers of turbines: [] confirmed that the Soviets are negotiating with the French firm of Alsthom-Atlantique (AA). AA received a contract in November 1981 for 40 compressor sets and the critical components for these sets will be available in December 1982. The Soviets had ordered these sets as backups in case of a U.S. embargo. Since the original contract for the 40 sets antedates the embargo, it is not subject to the U.S. sanctions. The Soviets have ordered 100 additional sets from AA, which should be completed by March 1986. The Government of France has been exerting pressure on AA to provide rotors for the Soviets and [] believes that the company that owns AA, CGT(?), was nationalized in early February 1982. [] explained that the U.S. embargo does not affect AA technology that was transferred from GE prior to 30 December 1982. AA is not permitted to pass the GE technology to anyone else. Should they do so, according to [] GE will "cut them off", effectively putting AA out of business. Since 1976, GE has been under no obligation to share advanced technology data with AA. GE protects its technology by advancing it and keeping ahead of its competitors rather than with patents and copyrights.

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(9) [] believes that the Siberian compressor stations for the export pipeline will be built by a Finnish firm, but he is not certain of the precise role to be played by the Finns--advisors, laborers, etc. Each of the compressor stations should ideally be equipped with two turbines. However, the Soviets can operate the pipeline by placing a turbine at every other station and consequently provide the line with 25% power. The Soviets could also increase distance between compressor stations, since the increased length of the line results in the same effect of controlling pressure. This latter option would greatly increase the cost of the pipeline.

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c. Construction:

(1) [] visited the Urengoy region circa February 1977. They observed that West German-made pipe was being laid by Caterpillar tractors (model "594"). The pipes were triple-jointed near Nadym. Since

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temperatures were as low as -30 degrees Centigrade, pre-heaters were applied to the pipes to melt the snow while welding was underway. Unfortunately, [redacted] was unable to observe the quality of the welds. He noticed that the ditch-digging machine (probably Soviet-made) was of excellent quality, as were the pipehauling trucks. The ditch-digging machine was capable of digging frozen ground; pipes were laid in the ditches and covered with a blanket of snow.

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(2) [redacted] described the Soviets' approach to pipeline construction as "very aggressive". He said that the Soviets view the construction as a way to culturalize a region and in fact the Soviets have built the new city of Nadym. The living standards for the 30,000 inhabitants were higher than those in Moscow. The Soviets appear to have major logistical problems, however, and the city was still half-finished in 1977.

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(3) [redacted] stated that one of his employees also visited a construction camp in the USSR where he observed four parallel 56-inch lines (thickness of pipe: .736 inches). The camp was located at Bielrosk (Phonetic).

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4. The one hour overview session, conducted by Henry Rowen, was attended by Assistant Secretary of State Buckley, DCI Casey, and other senior officials. It was agreed that the assumption that the Soviets can be denied western technology is not altogether realistic. It was determined that the Soviets can obtain needed technology and that if the compressor stations (with turbines) were ordered today, they could be on line by 1985. The Soviets would therefore be able to provide gas, with a 25% shortfall, to Western Europe as planned.

5. The Soviets might still be vulnerable in two remaining areas: (a) need for West European credits to finance pipeline construction; and (b) need for a gas market in Western Europe. It is estimated that the first strand of the pipeline will cost \$10 billion and that the second strand will cost \$5 billion.

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Attachments:
As stated

cc: [redacted]
NIO-ECON (3)
SOVA/SE/[redacted] (2)

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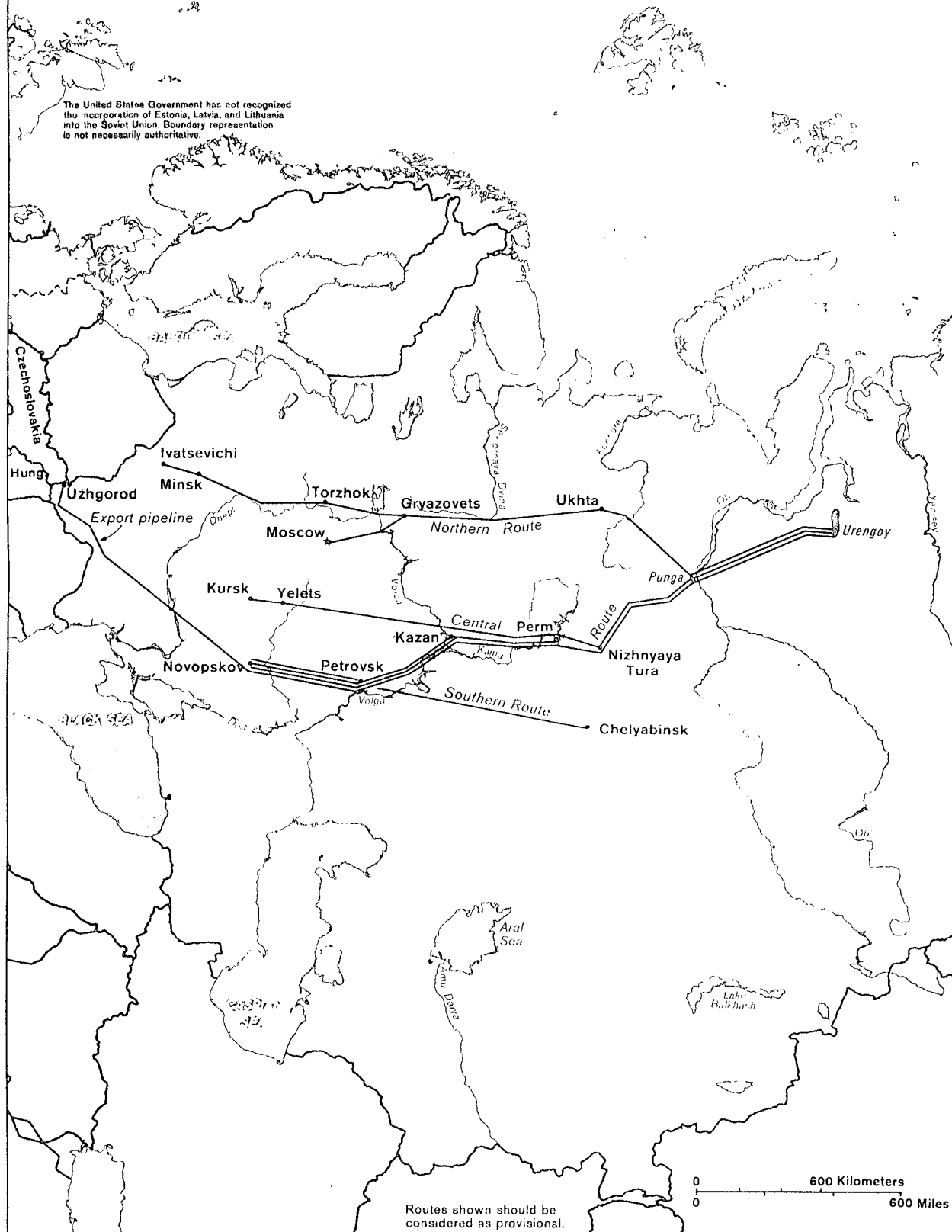
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USSR: Planned 1,420 mm Gas Pipelines, 1981-1985

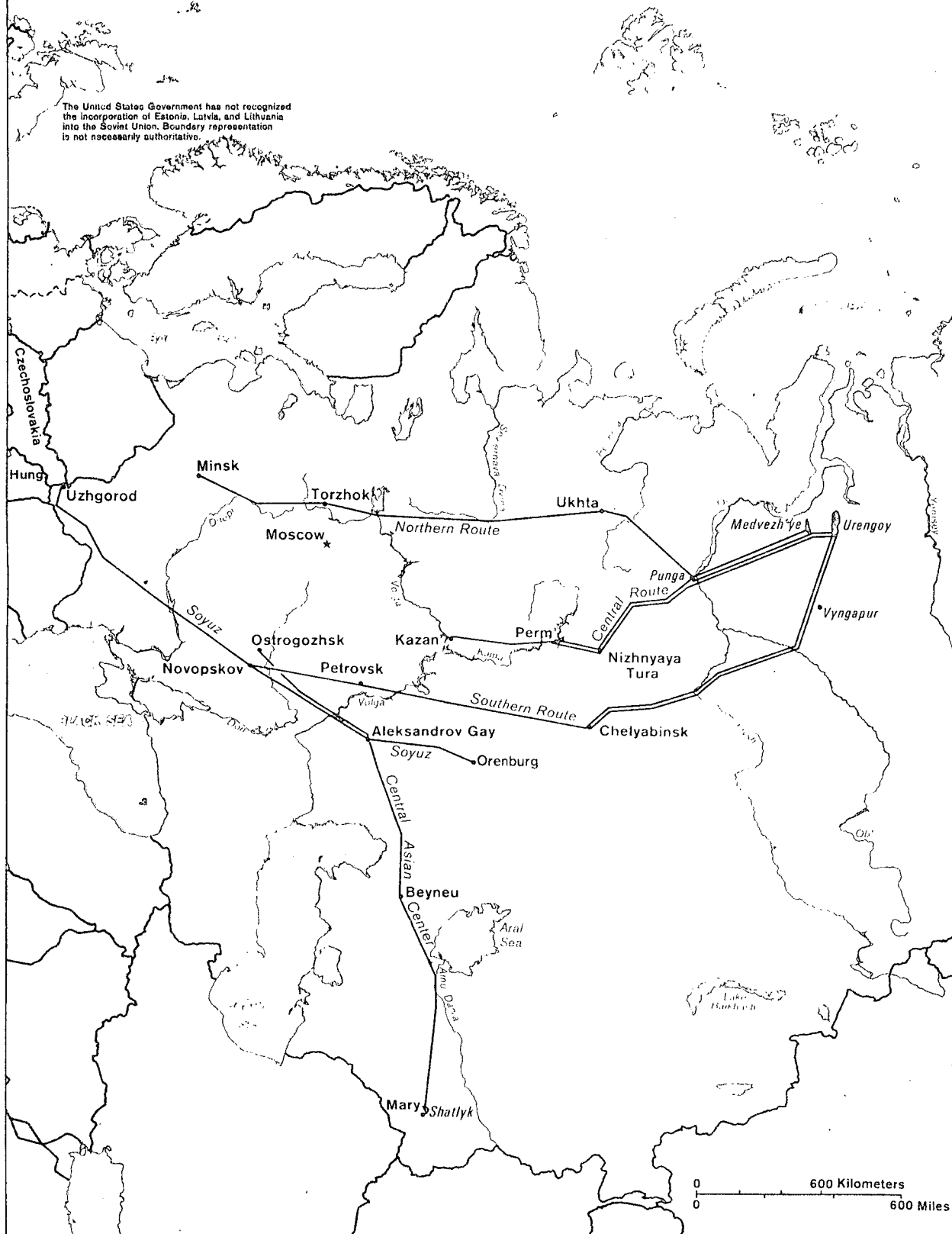
The United States Government has not recognized the incorporation of Estonia, Latvia, and Lithuania into the Soviet Union. Boundary representation is not necessarily authoritative.



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USSR: Existing 1,420 mm Gas Pipelines, 1980

The United States Government has not recognized the incorporation of Estonia, Latvia, and Lithuania into the Soviet Union. Boundary representation is not necessarily authoritative.



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Figure 1

USSR: Production of Major Fuels

	Natural Gas			Oil		Coal	
	(Billion M ³)	(mtoe)	AARG ¹	(Million tons)	AARG ¹	(Million tons)	AARG ¹
1960	45.3	38.1	23.0	147.9	10.4	509.6	2.5
1965	127.7	105.0	9.2	242.9	7.8	577.7	1.6
1970	197.9	165.4	7.9	353.0	6.8	624.1	2.4
1975	289.3	239.7	8.5	603.2	4.2	701.3	0.4
1980	435.2	360.6	7.7	603.2	0.8	716.4	1.6
1985 Plan	630.0	522.0		630.0		775.0	

¹ Average annual rate of growth calculated from unrounded numbers. Narkhoz 1980 pp. 156-7.